HABITAT AREAS OF PARTICULAR CONCERN

3.3 HABITAT AREAS OF PARTICULAR CONCERN

According to the language of the Interim Final Rule, EFH that is judged to be particularly important to the long-term productivity of populations of one or more managed species, or to be particularly vulnerable to degradation, should be identified as "habitat areas of particular concern" (HAPC) to help provide additional focus for conservation efforts. The following provisions of the Interim Final Rule provide guidance for habitat areas of particular concern:

> (6) (ii) Cumulative impacts from fishing. In addressing the impacts of fishing on EFH, Councils should also consider the cumulative impacts of multiple fishing practices and non-fishing activities on EFH, especially, on habitat areas of particular concern. Habitats that are particularly vulnerable to specific fishing equipment types should be identified for possible designation as habitat areas of particular concern.
>
> (9) Identification of habitat areas of particular concern. FMPs should identify habitat areas of particular concern within EFH. In determining whether a type, or area of EFH is a habitat area of particular concern, one or more of the following criteria must be met:
>
> (i) The importance of the ecological function provided by the habitat.
> (ii) The extent to which the habitat is sensitive to human-induced environmental degradation.
> (iii) Whether, and to what extent, development activities are, or will be, stressing the habitat type.
> (iv) The rarity of the habitat type.

The intent of the habitat areas of particular concern designation is to identify those areas that are known to be important to species which are in need of additional levels of protection from adverse impacts. Management implications do result from their identification. Designation of habitat areas of particular concern is intended to determine

what areas within EFH should receive more of the Council's and NMFS' attention when providing comments on federal and state actions, and in establishing higher standards to protect and/or restore such habitat. Certain activities should not be located in areas identified as habitat areas of particular concern due to the risk to the habitat. Habitats that are at greater risk to impacts, either individual or cumulative, including impacts from fishing, may be appropriate for this classification. Habitats that are limited in nature or those that provide critical refugia (such as sanctuaries or preserves) may also be appropriate. General concurrences may be granted for activities within habitat areas of particular concern; however, greater scrutiny is necessary prior to approval of the general concurrence.

Following a review of the scientific literature for information on areas deserving special attention or species with particular habitat associations, the Council has designated an area on Georges Bank as an HAPC for juvenile Atlantic cod (Figure 6). Considering the unique habitat associations and requirements of Atlantic salmon, the Council has designated the habitat of eleven rivers in Maine as HAPCs for Atlantic salmon (Figure 7). The Council may consider designating additional habitat areas of particular concern in the future. Additional designations may be based on existing or developing knowledge of species-habitat associations, the unique characteristics of a particular habitat type, the threats to sensitive habitats, or the importance of an area to multiple species.

3.3.1 Atlantic cod HAPC

Several sources document the importance of gravel/cobble substrate to the survival of newly settled juvenile cod (Lough *et al.* 1989; Valentine and Lough 1991; Gotceitas and Brown 1993; Tupper and Boutilier 1995; Valentine and Schmuck 1995). A substrate of gravel or cobble allows sufficient space for newly settled juvenile cod to find shelter and avoid predation (Lough *et al.* 1989; Valentine and Lough 1991; Gotceitas and Brown 1993; Tupper and Boutilier 1995; Valentine and Schmuck 1995). Particular life history stages or transitions are sometimes considered "ecological bottlenecks" if there are extremely high levels of mortality associated with the life history stage or transition. Extremely high mortality rates attendant to post-settlement juvenile cod are attributed to high levels of predation (Tupper and Boutilier 1995). Increasing the availability of suitable habitat for post-settlement juvenile cod could ease the bottleneck, increasing juvenile survivorship and recruitment into the fishery. For these reasons, areas with a gravel/cobble substrate meet the first criterion for habitat areas of particular concern.

Specific areas on the northern edge of Georges Bank have been extensively studied and identified as important areas for the survival of juvenile cod (Lough *et al.* 1989; Valentine and Lough 1991; Valentine and Schmuck 1995). These studies provide reliable information on the location of the areas most important to juvenile cod and the type of substrate found in those areas. These areas have also been studied to determine the effects of bottom fishing on the benthic megafauna (Collie *et al.* 1996; Collie *et al.* 1997). Gravel/cobble substrates not subject to fishing pressure support thick colonies of emergent epifauna, but bottom fishing, especially scallop dredging, reduces habitat complexity and removes much of the emergent epifauna (Collie *et al.* 1996; Collie *et al.* 1997). Acknowledging that a single tow of a dredge across pristine habitat will have few

long-term effects, Collie *et al.* (1997) focus on the cumulative effects and intensity of trawling and dredging as responsible for potential long-term changes in benthic communities. For these reasons, the identified area on the northern edge of Georges Bank meets the second criterion, as well as the cumulative effects consideration, for designation as a habitat area of particular concern.

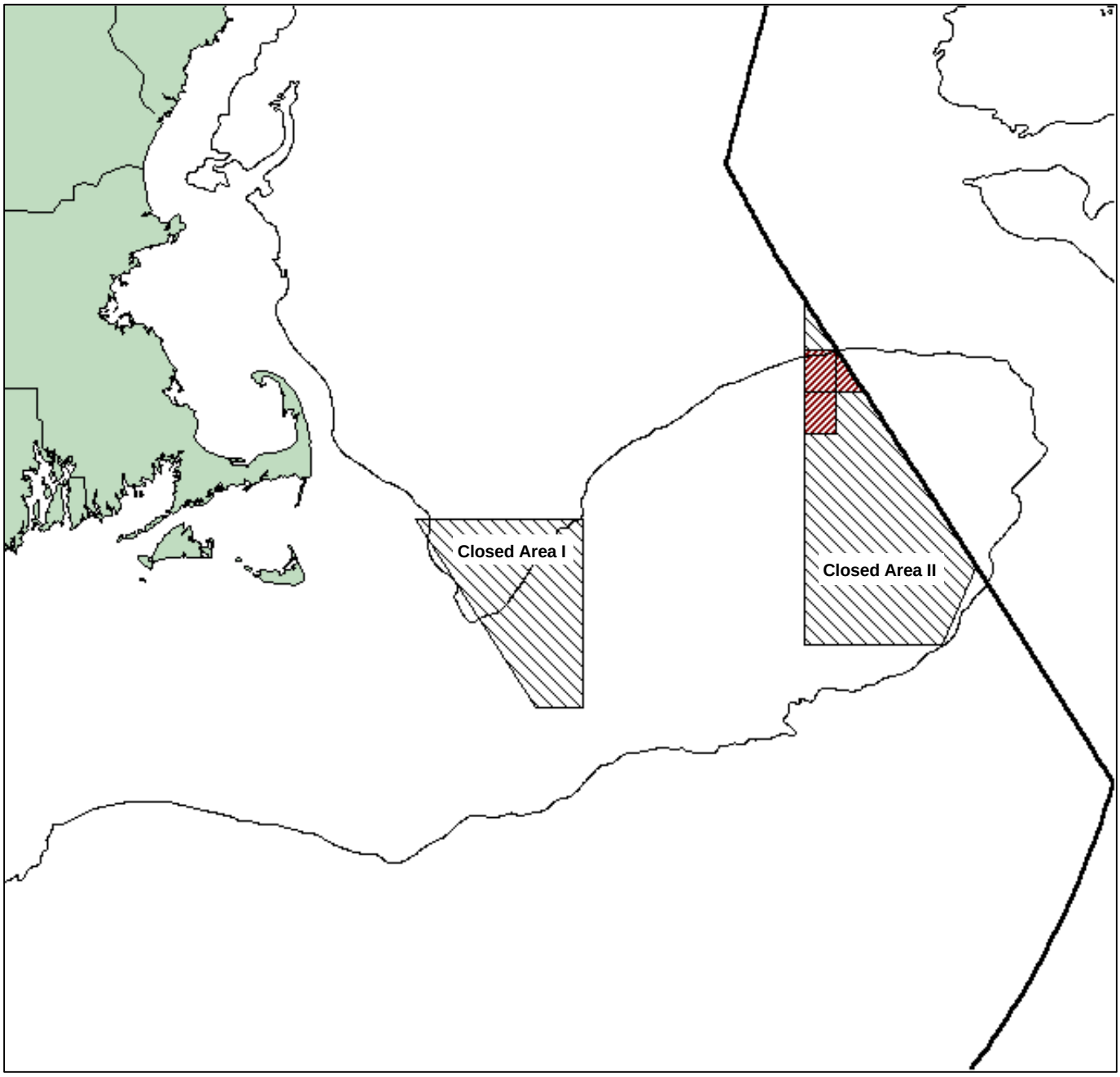
Collie *et al.* (1997) also describe the relative abundance of several other species such as shrimps, polychaetes, brittle stars, and mussels in the undisturbed sites. These species are found in association with the emergent epifauna (bryozoans, hydroids, worm tubes) prevalent in the undisturbed areas. Several studies of the food habits of juvenile cod identify these associated species as important prey items (Hacunda 1981; Lilly and Parsons 1991; Witman and Sebens 1992; Casas and Paz 1994; NEFSC 1998). These areas provide two important ecological functions for post-settlement juvenile cod relative to other areas: increased survivability and readily available prey. These areas are also particularly vulnerable to adverse impacts from mobile fishing gear.

3.3.2 Atlantic salmon HAPC

Seven small, coastal drainages located in the Downeast and midcoast sections of Maine hold the last remaining populations of native Atlantic salmon in the United States (MASA and USFWS 1996). These important rivers are the Dennys, Machias, East Machias, Pleasant, Narraguagus, Ducktrap, and Sheepscot. The U.S. Fish and Wildlife Service (USFWS) and NMFS have determined that these rivers represent one distinct population segment (DPS). A DPS is defined as a population of vertebrates that is discrete and ecologically significant. Four other rivers in Maine -- the Kennebec, Penobscot, St. Croix, and Tunk Stream -- are being considered for possible inclusion in the DPS.

By supporting the only remaining U.S. populations of naturally spawning Atlantic salmon that have historic river-specific characteristics, these rivers provide an important ecological function. These river populations harbor an important genetic legacy that is vital to the persistence of these populations and to the continued existence of the species in the United States. Unfortunately the habitat of these rivers is susceptible to a variety of human-induced threats, from dam construction and hydropower operations to logging, agriculture, and aquaculture activities. Human activities can threaten the ability of Atlantic salmon to migrate upriver to the spawning habitat, the quality and quantity of the spawning and rearing habitat, and also the genetic integrity of the native populations contained in the rivers. The habitat of these rivers serves two very important purposes in terms of being habitat areas of particular concern: (1) they provide a unique and important ecological function; and, (2) they are sensitive to human-induced environmental degradation. Accordingly, the rivers meet at least two criteria for designation as habitat areas of particular concern.

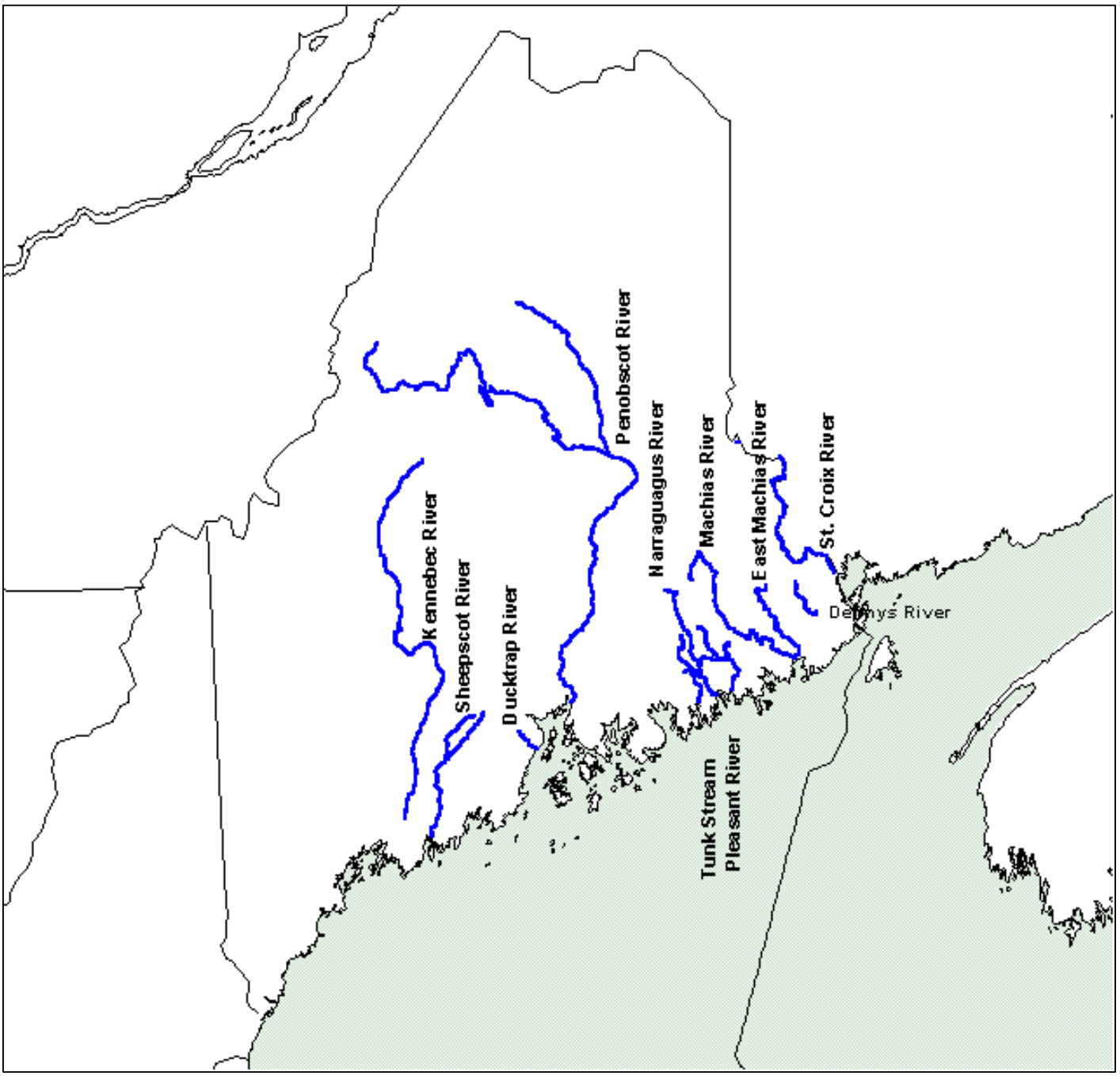
Figure 6: Habitat Area of Particular Concern for Juvenile Atlantic Cod



The shaded areas represent Closed Areas I and II, as indicated.

The darkened area within Closed Area II represents the Habitat Area of Particular Concern for juvenile Atlantic cod.

Figure 7: Habitat Areas of Particular Concern for Atlantic Salmon



These eleven rivers in Maine have been designated as "habitat areas of particular concern" for Atlantic salmon, based on the importance of the habitat of these rivers in supporting unique and important populations of Atlantic salmon in the United States.